

Title: Input Device

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Cross Reference to Related Applications

[0001] This Application claims priority to Taiwan Patent Application No. 091135531 entitled "Input Device," filed December 9, 2002.

Field of the Invention

[0002] The present invention relates to an input device allowing users to quickly differentiate between the input states, and more particularly, to an input device of computers.

Background of the Invention

[0003] Many electronic apparatus include input devices for inputting data. Input devices of, for example, a mobile phone, a desktop or a notebook, usually have several input modes, for example, English input mode, Chinese input mode and numeral input mode. Because users often are not aware of the current input mode when they input data, erroneous input or lowering of input speed occurs from time to time. Therefore, there is a need to provide input devices allowing users to quickly differentiate between the input states.

Summary of the Invention

[0004] The present invention provides an input device allowing users to quickly differentiate between the input states and choose the input mode.

[0005] The input device of the present invention includes a first light source, a second light source, a control module and a cap. The control module controls the first light source and the second light source. The first light source emits a first light of a first color, and the second light source emits a second light of a second color. The cap has a first portion and a second portion; the first portion displays light of the first light source of the first color and the second portion displays light of the second light source of the second color. As the input device is in a first state, the control module controls the first light source to emit the first light to illuminate the first portion, and as the input device is in a second state, the control module controls the second light source to emit the second light to illuminate the second portion.

Brief Description of the Drawings

[0006] Fig. 1a shows a schematic diagram of a first embodiment of the input device of the present invention.

[0007] Fig. 1b shows a side view of the first embodiment of the input device of the present invention.

[0008] Fig. 2 shows a schematic diagram of a second embodiment of the input device of the present invention.

[0009] Fig. 3 shows a schematic diagram of a third second embodiment of the input device of the present invention.

Detailed Description of the Invention

[0010] The present invention provides an input device allowing users to quickly differentiate between the input states and choose the input mode. The input device can be

for use with electronic apparatus such as a mobile phone, a desktop and a notebook. The embodiments of the present invention are disclosed in detail in the following.

The first embodiment:

[0011] Fig. 1a shows a schematic diagram of the first embodiment of the input device of the present invention. The input device 100 includes at least a control module 120, a first light source 130, a second light source 140 and a cap 110. The first light source 130 emits a first light 132 of a first color, and the second light source 140 emits a second light 142 of a second color. The control module 120 controls the first light source 130 and the second light source 140. The cap 100 has a first portion 112 and a second portion 114. The first portion 112 allows most of the first light 132 to pass and blocks most of the second light 142; the second portion 114 allows most of the second light 142 to pass and blocks most of the first light 132. As the input device 100 is in a first state, the control module 120 controls the first light source 130 to emit the first light 132 to illuminate the first portion 112; as the input device 100 is in a second state, the control module 120 controls the second light source 140 to emit the second light to illuminate the second portion 114.

[0012] Fig. 1b shows a side view of the first embodiment of the input device of the present invention. The first portion 112 includes a first filter corresponding to the first color, and in another embodiment, the first portion 112 is made of a first fluorescence corresponding to the first color. The second portion 114 includes a second filter corresponding to the second color, and in another embodiment, the second portion 114 is made of a second fluorescence corresponding to the second color. The first light source 130 includes a first light emitting diode corresponding to the first color, and the second light source 140 includes a second light emitting diode corresponding to the second color.

The second embodiment:

[0013] Fig. 2 shows a schematic diagram of the second embodiment of the input device of the present invention. Of all the parts of the input device 200, only the cap 250 is structurally different from the cap 110 in the first embodiment; the other parts are the same. The cap 250 has a first portion 230 and a second portion 240. The first portion 230 allows most of the first light 132 to pass and blocks most of the second light 142 and the second portion 240 allows most of the second light 142 to pass and blocks most of the first light 132. The cap 250 is connected to the light guide 210 and the light guide 210 is disposed on the substrate 220. The first light source 211 or the second light source (not illustrated) is controlled to emit light transmitted via the light guide 210 and passing out of the first portion 230 or the second portion 240 through the gaps in the structure of the cap 250. The first and the second portions here are filters, but in other embodiments the portions can be made of fluorescence material illuminating the light with corresponding color.

The third embodiment

[0014] Fig. 3 shows a schematic diagram of the third embodiment of the input device of the present invention. The input device 300 includes a first cap 310, a second cap 320, a first light-guiding structure 340, a second light-guiding structure 340, a first light source 350, a second light source 360 and a control module 370. The first cap 310 includes a first portion 312 and a second portion 314, and the second cap 324 includes a first portion 322 and a second portion 324. The first light-guiding structure 330 corresponds to the first portions 312 and 322 and the first light source 350 respectively. The second light-guiding structure 340 corresponds to the second portions 314 and 324 and the second light source 360 respectively. The control module 370 controls the first light source 350 and the second light source 360 to emit light. As the input device 300 is in a first state, the control module 370 controls the first light source 350 to emit light, and the light is transmitted to

the first portions 312 and 322 via the first light-guiding structure 330 and passes through them. At this time, no light passes through the second portions 314 and 324, and users can easily determine that the input device 300 is in the first state according to the brightness of the first portions 312 and 322. As the input device 300 is in a second state, the control module 370 controls the second light source 360 to emit light, and the light is transmitted to the second portions 314 and 324 via the second light-guiding structure 340 and passes through them. At this time, no light passes through the first portions 312 and 322, and users can easily determine that the input device 300 is in the second state according to the brightness of the second portions 314 and 324. In this embodiment, the first light source 350 and the second light source 360 can be of the same color or not. The first and second portions here are filters, but in other embodiments the portions can be made of fluorescence material illuminating the light with corresponding color.

[0015] The input device 100, 200 and 300 of mentioned embodiments can be used for the keyboards of mobile phones or computers. When users want to input data, they can quickly determine the current input state by the color shown on the portions of the caps to avoid erroneous input and lowering of input speed.

[0016] While the invention has been described in connection with what is presently considered to be the most practical and preferred embodiments, it is to be understood that the invention is not to be limited to the discovered embodiments. The invention is intended to cover various modifications and equivalent arrangement included within the spirit and scope of the appended claims.